

# Copper-Magnesium

# CMG1

Copper-magnesium is a solid solution alloy providing high strength with nominal reduction in conductivity relative to copper. CMG1 is one of the alloys covered by the broad CDA alloy designation C18661 for copper-magnesium. CMG1 combines high electrical conductivity with good tensile strength, excellent solderability and plateability. Applications include connectors, semiconductor pins, catenary trolley cables and conductors. There are no ASTM developed temper ranges for this alloy and the listed values are the recommendations of Fisk Alloy Wire.

Mechanical Properties	
● ROUND & ■ SQUARE WIRE... as drawn	
Temper	Tensile Strength, PSI
Annealed	35-46,000
½ Hard	55-70,000
Hard	75-90,000
Spring	90,000 min



Physical Properties		
Property	English Unit	Metric Unit
Melting point (liquidus)	1975°F	1080°C
Melting Point (Solidus)	1870	1020°C
Density	.321 lb/ in <sup>3</sup>	8.89 gm/cm <sup>3</sup>
Thermal conductivity (Annealed)	185 Btu ft/sq ft hr °F @ 68°F	.770 cal cm/sq cm sec °C @ 20°C
Coefficient of Thermal Expansion	9.8x10 <sup>-6</sup> per °F (68 to 392°F)	17.0x10 <sup>-6</sup> per °C (20 to 200°C)
Electrical Resistivity (Annealed)	13.0 ohms (cir mil/ft) @ 68°F	2.54 microhm cm @ 20°C
Electrical Conductivity (Annealed)	80% IACS*	0.464megmho/cm @ 20°C
Modulus of Elasticity	18125 ksi	125000 MPa
* International Annealed Copper Standard		

Chemical Composition	
Element	%
Copper	Rem.
Mg	0.1-0.2
P	0.001 to 0.02
Sn	0.2 max.
Fe	0.1 max.
Copper plus sum of named elements 99.5% min	

Specifications
ASTM B250

Metric Conversion Factors for Tensile Strength
Kg/mm <sup>2</sup> = KSI x 0.7031
Newton/mm <sup>2</sup> or MPa = KSI x 6.895

Mill Limits	
Round	.0010 - .1285 inch .025 – 3.26 mm
Square and Rectangular	.0100 – .0808 inch .25 – 2.05 mm Corner Radius as Specified
Flat	Thickness: .0100 - .0500 inch .25 – 1.27 mm Width: .0150 - .2500 inch .38 – 6.35 mm Edge Condition as Specified
Shapes	Special Shapes and Sizes Produced to Order

**The information provided on this page is for reference only.**

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